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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/667,759 | 09/22/2003 | Sean T. Crowley | AMKOR-022CB | 1384 |
| 7663 | 7590 | 12/29/2005 | EXAMINER | |
| STETINA BRUNDA GARRED & BRUCKER 75 ENTERPRISE, SUITE 250 ALISO VIEJO, CA 92656 | | | GRAYBILL, DAVID E | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2822 | |

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,759

Applicant(s)

CROWLEY ET AL. 

Examiner

David E. Graybill

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-10 and 12-20 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,3,5-9,12,14-16,18 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

In the rejections *infra*, generally, reference labels are recited only for the first recitation of identical claim elements.

Claims 1, 3, 5, 8, 9, 12, 14, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaumet (5640306) and Kato (JP02100353).

At column 2, lines 26-35, Gaumet discloses the following:

A semiconductor package comprising: a non-conductive film 2 defining opposed top and bottom film surfaces and including a plurality of openings 3, 4 disposed therein; a die pad 5 defining opposed top and bottom die pad surfaces, the top die pad surface being attached to the bottom film surface such that at least a portion of the top die pad surface is exposed within one of the openings, the leads being arranged in a first row which circumvents the die pad in spaced relation thereto; a plurality of leads 6 defining opposed top and bottom lead surfaces, the top lead surface of each of the leads being attached to the bottom film surface such that at least a portion of the top lead surface of each of the leads is exposed within a respective one of the openings; a semiconductor die 7 attached to the exposed portion of the top die pad surface and electrically connected 8 to the exposed portion of the top lead surface of at least one of the leads; and a package body 9 at least partially covering the semiconductor die, the film, the die pad and the leads such that the bottom die pad surface, the bottom lead surface of each of the

leads, and at least portions of the bottom film surface are exposed in the package body; wherein the top and bottom film surfaces, the top and bottom die pad surfaces, and the top and bottom lead surfaces of each of the leads are generally planar.

A semiconductor package, comprising: a non-conductive film including a plurality of openings disposed therein; a die pad attached to the film such that at least a portion of the die pad is exposed within one of the openings; a plurality of leads each of the leads being attached to the film such that at least a portion of each of the leads is exposed within a respective one of the openings, the leads being arranged in a first row which circumvents the die pad in spaced relation thereto; a semiconductor die attached to the die pad and electrically connected to at least one of the leads; and a package body at least partially covering the semiconductor die, the film, the die pad and the leads such that at least portions of the die pad and each of the leads are exposed in the package body.

A semiconductor package, comprising: a non-conductive film having a plurality of openings disposed therein; a die pad attached to the film such that at least a portion of the die pad is exposed within one of the openings; a plurality of leads attached to the film and arranged in at least an inner row which circumvents the die pad, at least a portion of each of the leads being exposed in a respective one of the openings; a semiconductor die attached

to the die pad and electrically connected to at least one of the leads; and a package body at least partially covering the semiconductor die, the film, the die pad, and the leads such that portions of the die pad and the leads are exposed in a common surface of the package body.

However, Gaumet does not appear to explicitly disclose wherein the bottom lead surface of each of the leads has a quadrangular configuration; wherein the exposed portion each of the leads has a quadrangular configuration.

Notwithstanding, as can be reasoned from well established legal precedence, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that, in view of the applied prior art, the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338,

220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Also, Gaumet does not appear to explicitly disclose a second row which circumvents the first row; outer rows which each circumvent the inner row; wherein the leads of the second row are staggered relative to the leads of the first row; wherein the leads of the second row are offset relative to the leads of the first row; wherein the leads of the outer row are staggered relative to the leads of the inner row.

Nonetheless, in the English abstract and drawings, Kato discloses a second row (of leads 2) which circumvents the first row (of leads 2); outer rows which each circumvent the inner row; wherein the leads of the second row are "staggered" relative to the leads of the first row; wherein the leads of the second row are offset relative to the leads of the first row; wherein the leads of the outer row are staggered relative to the leads of the inner row.

Moreover, it would have been obvious to combine this disclosure of Kato with the disclosure of Gaumet because it would provide an efficient lead layout.

In any case, as reasoned from well established legal precedence, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and

optimization to arrange the leads of Gaumet as claimed because applicant has not disclosed that, in view of the applied prior art, the arrangement is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical, and it appears prima facie that the process would possess utility using another arrangement. Moreover, it has been held that limitations directed to rearrangement of parts are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. In re Japikse 86 USPQ 70 (CCPA 1950); for example, reversal of parts was held to have been obvious. In re Gazda 104 USPQ 400 (CCPA 1955). Moreover, "simple adjustment of spatial orientation" has been held to be obvious. *Colt Industries Operating Corp. v. Index Werke, K.G. et al.*, 217 USPQ 1176 (DC 1982).

Claims 5 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaumet and Kato as applied to claims 1 and 9, and further in combination with Hoppe (5637858).

Gaumet and Kato do not appear to explicitly disclose wherein the bottom lead surface of each of the leads has a quadrangular configuration; wherein the exposed portion each of the leads has a quadrangular configuration.

Nonetheless, as cited *supra*, Hoppe discloses these limitations. Furthermore, it would have been obvious to combine this disclosure of Hoppe with the disclosures of Gaumet and Kato because it would facilitate provision of the leads of Gaumet and Kato.

Claims 6, 7, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaumet and Kato as applied to claims 1 and 9, and further in combination with Houdeau (6095423).

As cited *supra*, Gaumet and Kato disclose wherein the semiconductor die is electrically connected to the exposed portion of the top lead surface of each of the leads by a respective one of a plurality of bond wires 8; wherein the semiconductor die is electrically connected to each of the leads by a respective one of a plurality of bond wires.

However, Gaumet and Kato do not appear to explicitly disclose wherein the exposed portion of the top lead surface of each of the leads has an immersion gold layer formed thereon.

Regardless, at column 1, lines 29-35 and 58-64; column 3, lines 9-12 and 18-22; column 5, lines 15-18; and column 8, lines 31-33, Houdeau discloses wherein the exposed portion of the top lead surface of each of the leads 3 has a gold layer formed thereon. In addition, it would have been obvious to combine this disclosure of Houdeau with the disclosures of Gaumet and Kato because it would provide standard bondability to the leads.

Also, although Gaumet and Kato do not appear to explicitly disclose the process limitation "immersion," the layer of the applied prior art inherently possesses any structural characteristics imparted by the process limitation. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

Claims 4, 13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaumet and Kato as applied to claims 1, 9 and 18 *supra*, and further in combination with Chu (5801440).

Gaumet and Kato do not appear to explicitly disclose at least one continuous ring structure circumventing the die pad and extending between the die pad and the leads of the first row.

Nevertheless, at column 3, lines 12-44, Chu discloses at least one continuous ring structure 18 circumventing the die pad 14 and extending between the die pad and the leads 48 of the first row. Furthermore, it would have been obvious to combine this disclosure with the disclosure of Chu because it would provide a ground trace.

Applicant's amendment and remarks filed 10-11-5 have been fully considered, are addressed by the rejections *supra*, and are further addressed *infra*.

Applicant argues, "one of ordinary skill in the art considering the Gaumet reference would clearly not be motivated to combine the teachings

of the Kato reference thereto for purposes of hypothetically modifying the module 1 to include a multiplicity of pins protruding from the insulating material 9 in any pattern or arrangement, or to include an arrangement of lateral conductive elements 6 different from that shown and described in the Gaumet reference."

This argument is respectfully deemed unpersuasive because it is not necessarily maintained in the rejection that one of ordinary skill in the art considering the Gaumet reference would be motivated to combine the teachings of the Kato reference thereto for purposes of hypothetically modifying the module 1 to include a multiplicity of pins protruding from the insulating material 9 in any pattern or arrangement. Further, adequate rationale is recited to combine the disclosures of Gaumet and Kato.

Applicant also asserts that the conclusion of obviousness is based upon improper hindsight reasoning. Indeed, it has been recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning; yet, so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was conceived, and so long as it does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper. In re McLaughlin, 443 F.2d 1392; 170 USPQ 209 (CCPA 1971). To

this end, it is respectfully submitted that these criteria are satisfied in the rejection of the instant invention.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

For information on the status of this application applicant should check PAIR: Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

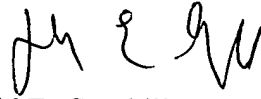
Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.
The fax phone number for group 2800 is (571) 273-8300.

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A handwritten signature in black ink, appearing to read 'D.E. Graybill', is positioned above the printed name.

David E. Graybill
Primary Examiner
Art Unit 2822

D.G.

23-Dec-05